STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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May 23, 2007

Mr. Orlando Monaco
Department of Navy
Base Realignment and Closure
Program Management Office-Northeast
4911 South Broad Street
Philadelphia, PA 19112-1303

Re: Naval Exchange (NEX) Round 3
NEX Workplan Addendum
Naval Air Station, Brunswick, Maine

Dear Mr. Monaco:

The Maine Department of Environmental Protection (MEDEP) has reviewed the draft "Workplan Addendum for DBB Pilot Test Expansion", dated April 2007, and the "Round 3 Summary Report for Denitrification-Based Biodegradation Pilot Test, Naval Exchange Service Station" dated April 2007, prepared by Tetra Tech NUS, Incorporated. Based on that review MEDEP has the following comments and issues.

Round 3 Summary Report for Denitrification-Based Biodegradation Pilot Test,

General Comments:

Round 3 Summary Report

1. MEDEP supports the comments submitted by USEPA in response to the Round 3 Summary Report dated April 2007. In particular, the comments for the Round 3 report regarding evaluation of the groundwater dissolved oxygen concentrations and their effect on the degradation efficiency, the relative stability of the interpreted plume shape, and the potential for mobilization of metals are notable.

2. Based on the Round 3 Summary Report, MEDEP sees no evidence that fourteen N-Blend applications over twenty months have produced any significant petroleum degradation. The figures depicting the soil and groundwater concentrations at Baseline and Rounds 1, 2, and 3 are virtually identical. The apparent decrease in plume size at Round 2 may have been no more than an artifact of limited sampling or how the concentration contours were drawn, therefore the Round 3 "rebound" may not be real. It may never have significantly changed since 2004. TtNUS states that the extent of soils exceeding 500 mg/kg after Round 3 appears smaller than in 2004 (page 3-9). MEDEP feels that the opposite is true.

   TtNUS believes that the N-Blend treatment was decreasing the petroleum mass through Round 2. TtNUS attribute the "rebound" to either 1) a new release from the NEX; or 2) increased precipitation/infiltration during 2005 and 2006 which leached vadose zone product into the saturated zone. Neither hypothesis is substantiated. The latter seems unlikely since

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the vadose zone and shallow saturated soils were treated by Soil Vapor Extraction and air sparging for nearly ten years, to the point of diminishing returns.

No evidence is offered to support the contention that N-Blend treatment is working but is countered by new petroleum being imported - either from the vadose zone, or as dissolved product from the upgradient source area. This statement (p 3-6) that the microbial population is increasing run counter to Geovation's observation (App.D, p.8) that 2006 cell counts have been lower. (This, Geovation offers as evidence that the hydrocarbon mass must be reduced. They trust the indirect biochemical information but dismiss the direct soil and groundwater analyses.)

A final possibility - suggested by both TtNUS and by Geovation - is that non-petroleum (biodegradation) compounds are being quantified in the Gasoline Range Organics (GRO) analysis and producing erroneously high results. MEDEP posed this as a potential problem at the beginning of the pilot program, and suggested some samples be split and conditioned (silica cleanup) to remove the polar, biological GRO component. This can still be done to test the hypothesis. If TtNUS proceeds with it, high-GRO samples from outside the treatment area should also be conditioned and analyzed, to determine how much the silica cleanup also reduces non-biological GRO. Anecdotal information suggests that silica may remove as much as 20% of target (petroleum) GRO, as well as GRO-range biological compounds. The sample from outside will serve as a control - so that GRO removed in sample cleanup isn't credited as GRO degraded by N-Blend treatment.

3. As part researching the history of this site, MEDEP read the Corrective Action Plan (CAP) (March 2004) which outlines the Denitrification-Based Bioremediation (DBB) remedy currently being performed. In the CAP there is section on Long Term Monitoring which includes quarterly monitoring of 22 existing monitoring wells and two micro wells. Please provide the data for the quarterly monitoring for the duration of the DBB. If the monitoring has not been performed then the downgradient monitoring must be performed immediately to evaluate whether the dissolved phase plume boundary has expanded downgradient. MEDEP and the Navy will need to discuss the implementation of the long term monitoring for this site.

Draft Work Plan Addendum

4. Following a review of the Round 3 report and the Work Plan, and relevant comments from USEPA, MEDEP cannot support an expansion of the Denitrification-Based Bioremediation (DBB) program based on the current data. If there is a possibility that the Phase 1 area is subject to inputs from sources upgradient of the area currently treated, Navy should consider some additional characterization prior to initiating another phase of the DBB Pilot Test. In Section 2.4 (Round 3) of the Work Plan Navy proposes two possible explanations for the apparent upward trend in the data, but as of now these are unsupported. Based on these potential factors influencing the interpretation of the data, it is uncertain how effective the Pilot Test has been to date. Heterogeneous contaminant distribution and field sampling techniques also contribute to variability in contaminant concentrations. The Navy must demonstrate that the DBB program is not just capable of degrading the petroleum source concentrations, but that decreases have occurred and can be achieved in a reasonable timeframe before expanding the program.

5. When MEDEP and the Navy agreed to an in situ treatment for this site it was to be an interim remedy as the Navy had plans to close the current NEX and move it else where on the Base. That was in 2002. Since that time Fenton's Reagent and now N-Blend has been tried at this site with little or no impact therefore it is time for the Navy, MEDEP and EPA to decide if a new remedy must be selected to remediate this site since based on the comments on the

Round 3 Summary Report, MEDEP sees no evidence that DBB has been effective. Please add the NEX to the June Technical Meeting agenda.

If after the stakeholders discuss this site the Navy chooses to proceed with additional treatment, MEDEP offers the following comments to the workplan:

6. MEDEP agrees with the comments submitted by EPA in response to this submittal. In particular MEDEP supports evaluation of down gradient water quality discussed in USEPA Comment #13. The down gradient groundwater quality is not well defined and this issue will be increasingly important given the BRAC process. MEDEP also would request the boring logs referenced in USEPA Comment #9 be appended to the report or provided with RTCs.

Specific Comments:

7. Section 3.2.3.1: *"As needed, a small quantity of N-Blend will also be applied..."* Please specify the wells being considered for these additions or the criteria that will define what wells will be utilized.

8. Section 3.2.3.2, Soil Sampling, and Table 3-2: The table indicates that four locations will be sampled and analyzed for EPA Method 8260, rather than 3. Please resolve the text and table differences.

9. Section 3.2.3.2, Groundwater Sampling: If the QAPP in the original work plan did not include information on USEPA Method 8260B, then that information must be added to a revised QAPP.

10. Section 3.2.4.1, Table 3-2: What criteria will be used to choose the last three groundwater sample locations?

11. Section 3.2.4.1, Table 3-2: Navy should consider adding a limited number of EPA Method 8260 samples to the Round 5 Baseline groundwater monitoring, if the Round 4 data prove to be useful for comparison purposes. The downgradient wells MW-NASB-9, MW-NASB-250, MW-NASB-251, and MW-NASB-252 should be added to the baseline groundwater monitoring event to establish some baseline data at the southern boundary of the site. No data have been collected from these wells since prior to the initiation of the DBB Pilot Test.

12. Section 3.2, Table 1-2: Please notify MDEP 14 days in advance of the field investigation work so oversight can be scheduled if time is available.

13. Section 3.3: When the new locations are completed and surveyed please provide MEDEP with an electronic table of survey coordinates for the Phase 2 locations and the three 300-series wells as part of the Round 4 Summary Report.

14. Section 5.1, Summary Report: If the Phase 2 proceeds, the data reports submitted to MEDEP must include an electronic data deliverable (EDD) in the Department's EDD format for field and laboratory data. The EDD template can be supplied to TetraTech on request, and the laboratory is likely already familiar with the format. Questions regarding the EDD may be addressed to Erika Bonenfant at Erika.Bonenfant@maine.gov, or to the Project Geologist Chris Evans. Additional information is online at http://www.maine.gov/dep/rwm/egad/#ed.

Please contact me at (207) 287-7713 or claudia.b.sait@maine.gov, if you have any questions or comments.

Respectfully,

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